

• Our Public Lands

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FALL 1975

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**Ask John Q. Public
Public Participation in
Land-Use Planning**

Page 4



**U.S. DEPARTMENT OF THE
INTERIOR**

BUREAU OF LAND MANAGEMENT
Curt Berklund, Director

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

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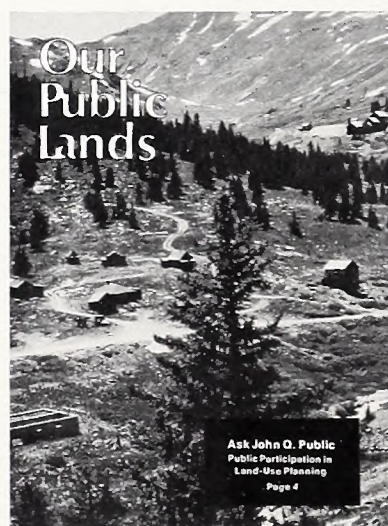
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Our Public Lands

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The Rocky Mountains were formed by an upheaval of the earth's crust that left veins of gold and silver ore along with other metals. Where early prospectors found paydirt they built cabins, sluice boxes, stamping mills and other mining structures. Today the inflated price of all metals has caused miners to return to "the old diggings" for the low grade ore they once scorned, and many near-ghost towns have experienced a new birth.



ON THE OUTER CONTINENTAL SHELF:

In energy related matters concerning the Outer Continental Shelf, the Department of the Interior has taken the following actions:

- Made available to the public a final environmental impact statement on a proposed acceleration of oil and gas leasing on frontier areas of the OCS on July 11, 1975.

- Held hearings pertaining to a proposed lease sale in the Gulf of Alaska (OCS #39) on July 14, 1975 in Anchorage, Alaska.

- Awarded a \$680,000 contract to the University of California at Santa Cruz to study marine mammals and seabirds of the Southern California marine borderland.

- Accepted bonus bids for oil and gas leases on the Outer Continental Shelf amounting to \$163.2 million for 66 tracts off the coast of western Louisiana and Eastern Texas.

- Released a tentative list of 154 tracts totaling 876,750 acres that the Department proposes to offer for lease on the mid-Atlantic Outer Continental Shelf (OCS #40) in the late spring of 1976.

- Released a draft environmental impact statement pertaining to a proposed lease of Outer Continental Shelf tracts in the Gulf of Mexico (OCS #41). The proposed sale would offer 135 tracts totaling 698,077 acres for lease.

ONSHORE ENERGY ACTIONS

The Department has taken the following actions pertaining to the development of onshore energy resources:

- Held public hearings to consider a draft environmental statement on the proposed Arctic Gas Transportation System. Hearings were held in Billings, Montana; Anchorage, Alaska; Chicago, Illinois; and Portland, Oregon on September 25-26. On September 29-30, hearings were held in Fairbanks, Alaska; Sacramento, California; Bismark, North Dakota; and Spokane, Washington. On October 2-3, the hearings were concluded in the cities of Juneau, Alaska; Reno, Nevada; and Washington, D.C.

- Made a draft environmental statement on the proposed 3,000 megawatt Kaiparowits Power Generating Project in southern Utah available for public review. Hearings were held in Salt Lake City, Utah; Phoenix, Arizona; Las Vegas, Nevada; Kanab, Utah; and Riverside, California.

PAYMENTS FROM PUBLIC LAND REVENUE

- On August 17, the Bureau of Land Management transferred \$247,325,028 from leasing revenues from the Outer Continental Shelf to the Land and Water Conservation Fund.

The Land and Water Conservation Fund Act calls for BLM to transfer an amount large enough to insure the fund's income to be no less than a \$300 million each year.

- Twenty-three States that share in revenue from Federal lands managed by the Bureau of Land Management have received a record payment of \$76.4 million from revenue collected from mineral leasing, grazing, and the sale of public land and public land resources. The 1974 payment for the same period was \$73.7 million.

WILD HORSES

- The Secretaries of Interior and Agriculture have reestablished a National Wild Horse Advisory Board to advise the two Departments on management, protection, and control of wild free-roaming horses and burros grazing on public land administered by the Bureau of Land Management and the U.S. Forest Service.

The Board was reestablished under terms of the Federal Advisory Committee Act of 1971.

PUBLIC LAND GRAZING

- As a result of a lawsuit filed in Federal Court by the National Resources Defense Council, the Bureau of Land Management has started the first of 212 environmental impact statements to determine the effects of domestic livestock grazing on public land. The first statement will cover BLM's Challis Unit in the Salmon District of Eastern Idaho.

CORRIDOR STUDY RELEASED

- A new Interior Department study has recommended that Federal agencies be directed to identify and reserve systems of "planning corridors" across public lands for use as future transportation routes and utility rights of way.

*A New Approach to Public
Involvement in Planning is Taking
Some of the Heat Out of Public
Land Controversies in BLM's
Montrose, Colorado District.*

ASK JOHN Q. PUBLIC

GEORGE W. REYNOLDS

Planning Coordinator
BLM Montrose,
Colorado District Office
Retired

West of the Rocky Mountains there is a move underway to involve the public to a greater degree in planning for the management of National Resource Lands. BLM administers 2.25 million acres of public land in its Montrose District in southwest Colorado. This land represents a mixture of topographic features and is intermingled with private holdings and land managed by a variety of state and Federal agencies. In such a setting, problems and controversies can and do often arise.

BLM's district manager frequently has to make the final decision on land use questions that will affect thousands and will leave an imprint on the landscape that will last for generations.

In recent years a mining company wanted to dig for alunite on Red Cloud Peak high in the heart of Colorado's scenic San Juan Mountains. There were other groups who wanted to preserve the pristine beauty of Red Cloud to protect the very qualities ram-bunctious prospecting and mining

would destroy. It was BLM's District Manager who would have to make the decision.

Sixty miles to the north of Red Cloud there are huge reserves of high quality coal that outcrops along the North Fork of the Gunnison Valley. In this same area, apple and cherry orchards help feed the nation. There are also neatly furrowed fields of sugar beets that are irrigated by the river that runs through that same coal field. Cattle graze in nearby valley and mountain pastures. In the background to the east are the rugged peaks of the West Elk Wilderness. America's largest flat top mountain, Grand Mesa with its Thousand Lakes, lies to the north. Around the valley are the scrub oak and sage lands where deer and elk find food and shelter during the Rocky Mountain winters.

The Bureau will have to make plans about the future of this area. There is a demand for the area's coal, but coal mining can change the character of surrounding communities from a

Shangrila of quiet farms, cattle ranches and picturesque villages into an area bustling with coal trains and overcast with smoke plumes from conversion plants. Do the people want this? Do they want more houses, more people, more traffic and crowded school rooms? Do they want more income pouring into an area that has been described as having a depressed economy?

Furthermore, is there a way to get the coal with less impact on the local environment? Can the more disagreeable aspects of development be avoided with careful planning?

The decision to lease coal rights on public land must be made by BLM. It is the Montrose District Manager who must weigh the pros and cons along with all possible alternatives.

*Evergreen sentinels stand in silhouette
against blue sky and white clouds
the scenic American Flats country.*

*Guarding aesthetic resources is one
objective of BLM's planning program.*

To the southwest San Miguel County is undergoing rapid social and economic changes as a result of a new ski area and the associated influx of new citizens. Where will the new subdivisions go? Where will they establish sanitary land fills? How much growth do the citizens want? National Resource Lands in the county will contribute to the solutions, and it is BLM that will make many of the decisions affecting the county's future.

These are typical of many of the land use planning decisions facing public land officials in the Bureau of Land Management. It is obvious that many of these decisions will have a profound impact that will reach far beyond the boundaries of public land and will affect the lives of nearby residents as well as the nation as a whole. A few years ago the District Manager and his staff would have made all of these decisions with little or no input from the people who would have been affected.

The decision for Red Cloud has been completed along with guidance for leasing Federal coal

along the North Fork of the Gunnison. San Miguel County is still looking for public assistance to reach decisions about the future in that county. Completed plans for Red Cloud and the North Fork bear the signature of Montrose District Manager Marlyn Jones, but Jones is the first to admit that he had a lot of help along the long hard road that he, his staff, and many private citizens have traveled in arriving at the plans that have been formulated.

A lot of people have helped choose the direction of future public land management. Their reaction to a sincere invitation to help in decision making has reconfirmed BLM's belief that today's American citizen can pioneer new paths in meeting the problems of modern America.

"New paths," in this case involved a novel approach to public participation in land use planning that involved a combination of BLM's multiple use planning system with a public involvement process developed by Andre Delbecq and Andy Van de Ven at the University of Wisconsin. About 1960 Delbecq and de

Ven set out to build a social planning model to handle emotional situations where a number of groups with different ideas and interests need to be brought together so that a common program can emerge.

Under the system, commonly known as the Delbecq system, the idea of torrid debate is out. Public meetings are like classroom sessions. Each person is required to listen to everyone's idea without argument or disparagement. The land manager and his staff are required to do the same. They are committed to accept the citizen's ability to grasp complicated land management issues and to acknowledge the citizen's right to make recommendations about policies, programs, and management activities. They are further committed, within the scope of their official responsibilities, to lend their tacit support to every technically sound and operable recommendation that survives the process of citizen refinement and review.

The use of the Delbecq system grew out of a need. The BLM District Office staff needed a



Like all government agencies, the Bureau of Land Management operates within a framework of law which establishes the perimeters of its public land programs. Within that framework, specific policies, programs and practices become the responsibility of public officials. In setting up program specifics, the land manager often has considerable latitude in determining how public land will be used. These field decisions affect the public's use of Federal land, and the wise land manager logically looks to the public to help him in reaching many land-use decisions.

Public involvement in planning for the management of public land or land resources predates the Bureau of Land Management.

Rather than decrease, public involvement has increased as more people with a greater variety of interests than ever before are taking part in the Bureau's decision making process.

The baby boom, the recreation boom, the affluent society, and the environmental movement have all had influence, as each new user group has wanted to have its say about the policies, programs, and practices of the Bureau.

BLM has welcomed this new interest and has given an attentive ear to the voices of public opinion. Beyond all doubt, changing public attitudes have had a profound effect on public land policy, and BLM has moved from the dominant use posture it once maintained to become the multiple use agency that it is today.

Every public land manager soon comes face to face with the problem of getting meaningful public input into his planning program and how to evaluate the advice he does get.

In recent years, sociologists, public administrators and others have been concerned with finding ways of involving more people and making more efficient use of the public interest in public programs, in the hope that public agencies can become more responsive to the public will and also gain public understanding and acceptance of those programs. One such system has been designed by Dr. Andre L. Delbecq and Andrew Van de Ven of the University of Wisconsin. Delbecq's system is a group process model for identifying problems and possible solutions, and has been used by BLM's Montrose District with some interesting results. This is the story of that experience as told by George W. Reynolds, a member of the District's planning staff until his recent retirement. As the article points out, the system will not solve all planning problems and it may not produce the same results in other locales or in other situations.

means to get away from the tumultuous debates that were so often associated with public participation in land use planning. At the same time, they wanted to find a way to determine true public attitudes about the management of public land. They took a hard look at the Delbecq system.

There were serious doubts: Would a system designed for social planning in heavily populated areas of Wisconsin work in Hinsdale, Colorado — the most sparsely populated in the nation?

Would westerners accept the unique controlled classroom techniques? Could a trained resource staff accept a system that limited their participation to the role of technical advisors during the public sessions?

They tried a test run on themselves. Many questions persisted. Why set up public planning meetings without first preparing a set of Bureau recommendations? How could you expect the public to reach sound land use decisions unless the Bureau led the way?

But Bureau personnel accustomed to dealing with the public on a daily basis felt that the system could put planning on solid ground by having recommendations come from a diversified public.

The plan was laid before the BLM Colorado State Director in Denver who decided that the system's sophisticated approach might be the only practical one.

However the district staff decided to make the first on-the-ground test in a less complicated area and chose the Cebolla-Powderhorn unit for their first planning effort.

The Delbecq five-phase system was launched at Gunnison in March 1972, with planners from several other BLM offices on hand to observe. The plan was completed after six meetings in July 1972. In the final phase, pro and con panels had reached agreement on all contested issues except the one of establishing the 40,400 acre Powderhorn Primitive area. Even on that issue, the panels had agreed on various management items based on technical data cranked into the system by BLM specialists.

"You know, people were so pleased at having concrete input on management recommendations that they actually applauded at the conclusion of Phase I meetings at Gunnison and Denver. They really liked the idea because everyone's ideas got equal treatment. Oh, a couple of people tried to break into debate, but the others didn't want the process broken and it was easy to keep the lid on," one BLM staffer recalled.

The fears of BLM technicians who took part in the process were allayed. They had their full professional input during Phase IV of the five-phase system. Those who had been concerned were pleased over how closely the public's recommendations followed Bureau policy. They now realized that, somehow, in the maze of national politics and bureaucracy, it is still the public who determines land use policy in the first place. Another revelation was the great amount of resource and technical data the public was familiar with.



Existing mining claims must be considered in every long range plan for National Resource Lands. This stake marks a corner of a claim on Atkinson Mesa. Inverted tobacco cans provide a convenient depository for the claim papers.



Before its ore vein ran out, Sherman was a thriving community. Now it's a ghost town and a monument to a bit of local history.

District personnel now turned their attention to the American Flats unit and launched the public participation phase in the fall of 1972. They completed the process in August 1973. Delbecq had suggested taking as much as two years. Cebolla-Powderhorn had taken about 7 months. The one-year run for American Flats seemed nearer the ideal.

Otherwise, the experiences with the land use planning effort in the two units were nearly the same with one major exception. On Red Cloud Peak, where miners would mine and preservationists would preserve, the pro and con panels issued a signed statement of consensus. Not only was the agreement between wilderness advocates and miners somewhat unique, but their joint recommendation has become the basic guideline for management throughout the 137,000 acre unit. The panels outlined methods for careful prospecting, for review and determination of relative values if minerals are found, and for the preservation of natural assets.

American Flats can continue to furnish minerals and outstanding recreational opportunity for the nation under cooperative management with the help of citizen advisors.

Normally there is a brief orientation during Phase I. Then people break up into groups of six or eight. They are given problem statements such as: "List those problems and issues you consider most important to be dealt with on the use and management of natural resources and lands in the Red Cloud area. Consider problems related to such things as wildlife, livestock forage, minerals, aesthetics, recreation, tourism, hunting and general land use including access and occupancy problems."

It is at this point that some land managers have misgivings. According to those who have had experience with the system, these misgivings are unfounded.

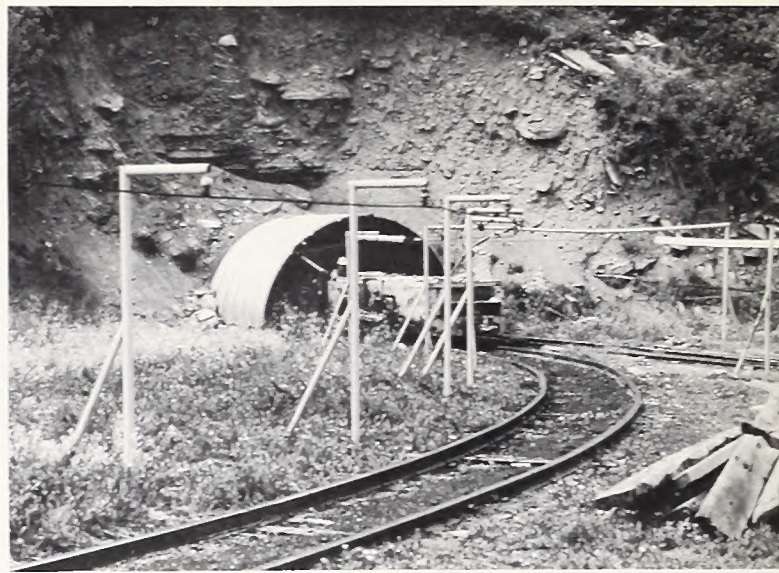
"Right now we are into our fourth planning series with the Delbecq system in the Montrose District," says District Manager, Marlyn Jones. "We've learned that a cross section of interested citizens know a tremendous amount about management, administrative problems, and



A more enduring monument marks the site of the Packer Massacre, and this young lady is its special guardian. Her name is Dina and she has made the incident her special project during the summers her family vacationed nearby. According to Dina, Albert Packer and five companions were marooned at this site in the winter of 1873. It has been said that Packer ate his companions to keep from starving. In planning for land use, BLM seeks to preserve and enhance historical sites.



BLM's planning system recognizes mining as a traditional use of National Resource Lands. This gold mine along the Dolores River continues to extract ore.



A BLM mineral lease allows coal to be mined from this deep shaft near Somerset, Colorado. A more intensive development of the District's coal resources was a prime consideration of the District's planning effort.

resource techniques. Besides they add local knowledge and a practical touch."

After a person, silently and by himself, has compiled his list, he next works with others at his table to eliminate duplications — but not contradictions — and to work up a round robin list in lettering large enough for everyone in the room to read. Next everyone individually ranks items from all the tables for priority or importance. The meeting ends with an explanation of the remaining phases.

Auditor-consultants are elected to serve as citizen representatives who will follow the other phases until results in the form of recommended management guidelines come back to the public for refinement.

In Phase II a group of nonagency specialists from the practical and academic worlds are asked to write down suggested solutions to the problems and issues. Again individual work is followed by group interaction and evaluation. The auditor-consultants attend these meetings to represent the viewpoint of their communities.

In Phase III administrators from concerned agencies — counties, towns, highway departments, forestry agencies, and the Bureau of Land Management — examine the practicality and legality of the suggested solutions. The auditor-consultants are again on hand to advise and interpret input from

the first two phases. Phase III results have been good in Montrose. There, District Manager Jones says, "We've probably averaged having 65 percent of the suggested solutions come through unaltered. Others survive with modifications to meet practical limitations and administrative requirements. A few have to be dropped because of legal barriers or — in our earlier efforts — because they crossed jurisdictional lines."

In Phase IV the technicians and land managers apply the recommendations from the first three phases to on-the-ground situations. Here resource inventories and social and economic evaluations are brought to bear. The result is a set of multiple use management recommendations designed to protect basic resources and to give emphasis to the items from the earlier phases.

Phase V is the time for testing and refinement. Do the recommendations really respond to the issues and concerns listed by the public in Phase I? Have we retained their order or priorities? The public who drafted the original list is the judge. Most of the guidelines are accepted without change, but some are not.

"This is where we really like the system," one BLM spokesman says. "We no longer have to make arbitrary decisions that tee off those who don't like such

decisions or those whose interests are compromised. When we have someone who opposes a recommendation, we have them appoint a panel of three people to support their contention. Then we ask those who support the recommendation as first presented to also appoint a panel.

The two panels meet at our office where all the technical information is handy, for the purpose of drafting a compromise recommendation."

Often the two panels reach an agreement after no more than hearing each other's viewpoint or special knowledge. Sometimes there is a need for minor adjustments in wording. At other times, as with Red Cloud Peak, a whole new management philosophy has to be developed. In that case, there were three alternate recommendations with someone taking exception to each. However, in eight hours time, the nine panelists saw the need for new procedures and new authorities.

The panel sessions are still not the end of the process. The panel's proposals go back to the public once more for comment or acceptance.

As a rule, the attendance at these final sessions is light since those who have been satisfied at previous meetings tend to stay away. Often the panelists and the auditor-consultants are the only



In arid portions of southwest Colorado, local communities may have to look to National Resource Lands for their domestic water supply. This deep well on BLM land supplies drinking water for the town of Uravan.



Recreation visits to public land have increased over the years to the point that recreation is a major factor in land use planning. These campers enjoy the conveniences of a BLM recreation area near Lake City, Colorado.

ones attending the final sessions.

New ideas create new methods. High on the list of issues raised by the public during both the Cebolla-Powderhorn and American Flats planning meetings were matters pertaining to interagency cooperation and coordination of Federal and local planning.

The North Fork of the Gunnison River in Colorado offered an opportunity for an interagency effort. Large areas of the Gunnison and Grand Mesa National Forests lay in Delta and Gunnison Counties. The Somerset Coal Field lay in both counties, and the Grand Mesa coal field lay in Delta County. Coal deposits lying beneath the National Forests are leased by the BLM's Montrose District Office as well as coal deposits underlying National Resource Lands and even those under certain private lands.

Delta County faced a need to complete the first part of its comprehensive plan, and all agencies faced 1974-75 planning deadlines for the area.

The BLM District Manager and the Area Manager responsible for the North Fork Unit met with the Delta County Commissioners in June 1973 to ask the County to conduct a cooperative public survey under the Delbecq system. With support from the six-county regional planning district, a 13-agency North Fork Joint Study

Group was formed. Since the Delbecq system was totally new to the County planners and differed from survey methods used by the Forest Service, BLM handled the chore of logistics, documenting input, and circulating results to all who attended the meetings and to the agencies involved. In all 470 individual suggestions — aimed at one or more of the 13 agencies — were logged and rated during Phase I meetings.

None of the agencies expected a single set of land use plans or management guidelines to emerge from the meetings, but they did expect to come up with plans that would allow them to coordinate management activities.

Suddenly a new dimension — the energy crisis — was thrown into the planning picture. BLM, responsible for the leasing of all federally owned coal in the District, was faced with an even shorter deadline than it had heretofore expected.

The North Fork Joint Study Group decided that BLM should push ahead with its own planning program independently of the other agencies, but continue to follow the standard phases of the Delbecq system. While some degree of coordination would be lost, the three resulting plans would still be based primarily on the original public input and should be complementary. All input from the public and all

resource inventory information from the cooperating agencies would be available. A common base map was agreed on.

BLM followed the Delbecq system through Phase V, but the deadline for recommendations on coal leasing lead into another step. The Joint Study Group met with the auditor-consultants to draft coal leasing guidelines. Over 40 suggestions were written up. In a later session, the auditor-consultants drafted more specific recommendations. This was followed by a joint session of Delta and Gunnison County Boards of Commissioners. Their recommendations augmented and supported those of the auditor-consultants. These two sets of recommendations now form the base for the Federal coal program in the North Fork.

By this time, land use planning efforts were getting underway in San Miguel County. Here the problems were different from those in other areas where the new system had been used. The town of Telluride — once all but a ghost town — was booming again because of the development of a ski area. The influx of tourists and new residents was changing the composition of the county's population as well as having impact on patterns of land use. Proposed subdivisions, new additions to towns, the development of sites for individual homes along with



Orchards and pastures are among the agricultural values that could be destroyed or damaged if the coal resources of the South Fork of the Gunnison are developed without adequate planning.

increased exploration for oil and gas and for uranium were impacting both the alpine and desert portions of the county. Both Forest Service and BLM lands are involved. However, BLM management guidelines, developed in much quieter times, were not scheduled for updating for several years and money and manpower were lacking.

San Miguel's County Planner felt that there was a need for a total county plan covering both public and private lands. He knew that any acceptable planning would have to be developed by the county's residents. He called a meeting of concerned agencies to set up a coordinated effort.

BLM personnel attended the meeting and told the County Planner about the Delbecq system. After consulting with the County Commissioners, the County Planner decided to use the system to develop a plan for both public and private lands.

Eventually the County Planner hopes to be able to present BLM with a total land use plan for San Miguel County, and in turn the Montrose District hopes to be able to present that plan to BLM's Colorado State Director as a management plan for National Resource Lands in San Miguel County.

The results achieved with the Delbecq system have been encouraging Montrose District

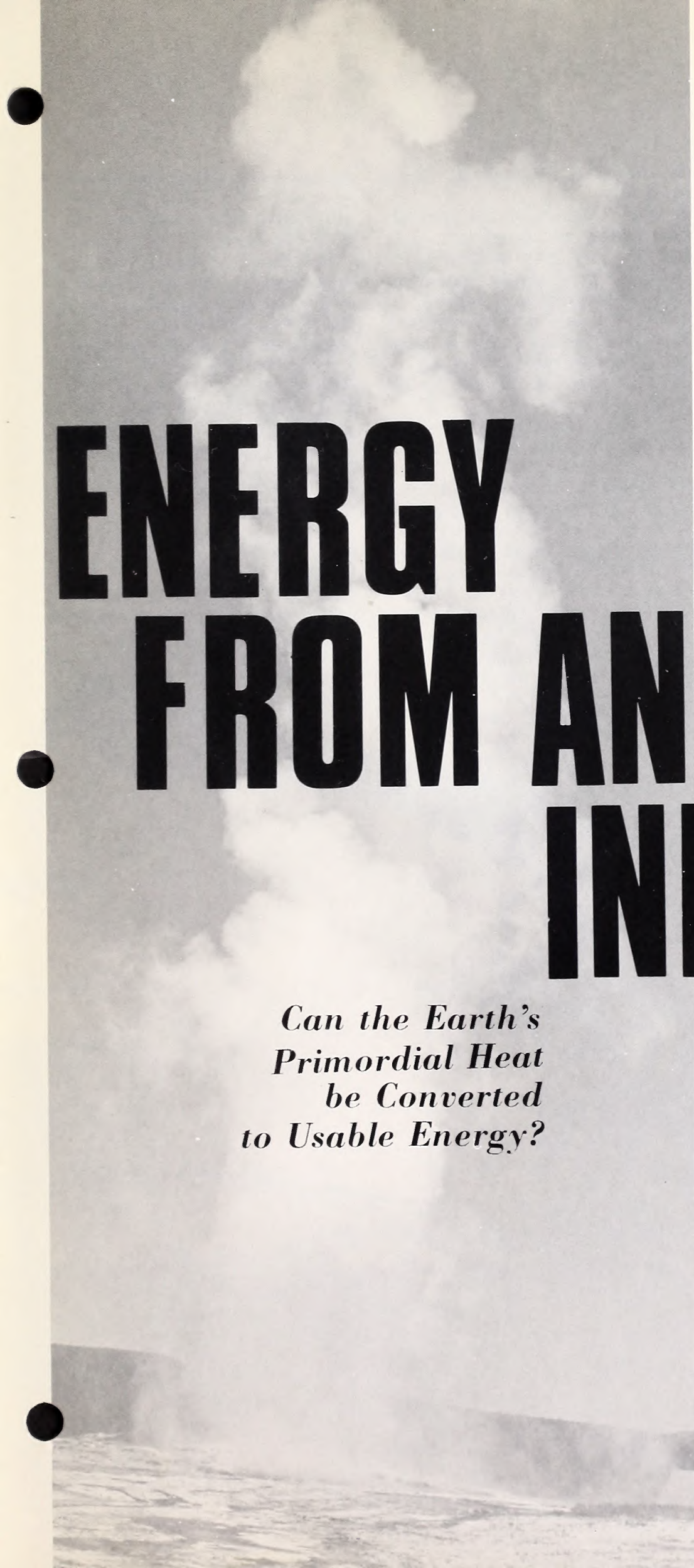
Manager Jones says: "Our contention is that planning must be done for and with the people that will be affected by the plan. Our planning efforts in the Cebolla-Powderhorn and the American Flats areas were moves in that direction. North Fork provided us with a refinement of the system because of the intense cooperative effort on the part of Delta County. In San Miguel County, we hope to demonstrate that governments at all levels can work together for the common goals of its citizens and accept a single document as a common blueprint for land use planning."

BLM's Montrose District staff agree that the system is not a complete panacea. It works — but it costs. It creates paperwork and staffers must be willing to donate many hours of work and evenings away from home. In terms of salaries for the time devoted to planning and other expenses involved, the cost may run twice as high as for the conventional method of going to the public for endorsement of a nearly completed plan. But the BLM staff in Montrose feels that the older and less costly method is no longer acceptable either to the agency or to the public.

"Actually, I am sure we are saving time and money in the long run," District Manager Jones maintains, "we save by avoiding false starts, unsupported programs and protracted disputes."

The system also makes demands on the public. Those involved must be prepared to spend evenings away from home, contribute mileage and may be tied up in a number of all-day conferences. There are frustrations. An interested person may fail to understand the importance of early meetings and wait to participate late in the process when they can force an opportunity to debate during Phase V of the process. At that point, the process seems to make no sense. Persons given to strong debate, or who are accustomed to favored personal treatment sometimes find it hard to adjust to the equal input system. On the whole, however, the Montrose staff believes that benefits outweigh the costs and frustrations.

The least that the agencies get is a public opinion poll generated and rated by concerned citizens. What the Montrose District and the public have been getting are management framework plans generated, refined, and approved by the majority of interested people. There's none of the bias of "more favored treatment" for anyone unless that happens to be what the majority wants. That is democracy in action, and BLM is pleased that its people have been able to help pioneer a successful effort to get decision making to the grass roots where the problems are real and the solutions practical.



ENERGY FROM AN INFERNO

*Can the Earth's
Primordial Heat
be Converted
to Usable Energy?*

SAM STAFFORD

BLM Office of Public Affairs

For years, scientists have been intrigued by the prospect of harnessing the tremendous energy potential of the earth's internal heat reservoirs for man's practical use.

But it has been only in relatively recent years that geothermal energy — the planet's primordial heat — has come in for serious attention as a possibly significant answer to looming commercial power shortages.

The vastness of this potential energy supply is mind boggling. Although the magnitude of all geothermal resources is not now possible to determine, it has been

estimated that the upper 10 miles of the earth's crust contains an amount of heat at least 2,000 times greater than the amount that would be generated if all the world's coal could be burned. Other experts have estimated that the geothermal energy in the form of steam and hot brine beneath California's Imperial Valley is sufficient to supply electrical power requirements of the Southwest for perhaps two centuries.

As with other sources of energy, however, opinions differ considerably as to how much of this awesome potential can be tapped in the next 10 to 15 years to help brighten the dismal national energy outlook. Right now the amount of commercial power being generated within or outside of the United States is negligible.

Following passage of the Geothermal Steam Act of 1970, some optimists predicted that geothermal energy would be providing as much as one-fifth of the Nation's electric power by 1985. At the opposite extreme were the self-proclaimed "realists" who maintained that geothermal power plants by that time would be supplying less than one percent of U.S. power.

Moderates among the geothermal advocates continue to cautiously forecast that geothermal plants will be generating in the range of 3 to 10 percent of present U.S. energy capacity by the mid and late 1980s. The estimate admittedly is laced with a lot of hope. But if it turns out to be accurate on the high side, the geothermal contribution to the Nation's total energy supply will be significant.

Since passage of the Geothermal Steam Act, which provides for private development of Federally owned geothermal resources through both competitive and non-competitive arrangements, the U.S. Department of the Interior has:

- Classified about 2.8 million acres in eleven Western States and Alaska — 60 percent of it Federally owned — as Known Geothermal Resources Areas (KGRAs):
- Designated roughly 100 million acres — about 55% under Federal jurisdiction — as Potential

Geothermal Resources Areas (PGRAs):

- Issued regulations for geothermal leasing and operations (in January 1974) after publishing an Environmental Impact Statement on the program and holding public hearings on the statement;
- Undertaken an extensive lease sale program on parts of 700 million acres of eligible Federal lands.

(Lands in national parks, wildlife refuges, etc., are excluded from leasing consideration.)

- Continued to support an active geothermal research program. By the end of Fiscal Year 1975, Interior's Bureau of Land Management had held 19 sales and issued 69 competitive leases on about 126,000 acres in KGRAs. The law requires that KGRA lands be leased through competitive bidding. Bonus bids for these sales totaled \$14.2 million.

An additional 20 competitive sales have been scheduled for Fiscal Year 1976. Offerings will range from 10,000 to 30,000 acres.

In recent months, the Bureau has accelerated its geothermal

program in order to more speedily process non-competitive lease applications. As of last August, BLM had received nearly 5,000 non-competitive geothermal lease applications covering about 10.2 million acres, and had issued 244 leases for 453,000 acres. About 45 percent of the applications will not become lease agreements for various reasons, according to Bob Pavlovich, who coordinates BLM's geothermal leasing operation.

He said the Bureau hopes to issue about 800 more non-competitive geothermal leases by the end of Fiscal Year 1976.

"This was a new program we had to get off the ground, and it has been very active," Pavlovich said, "It has been difficult, but we've been able to work most of the earlier bugs out of it."

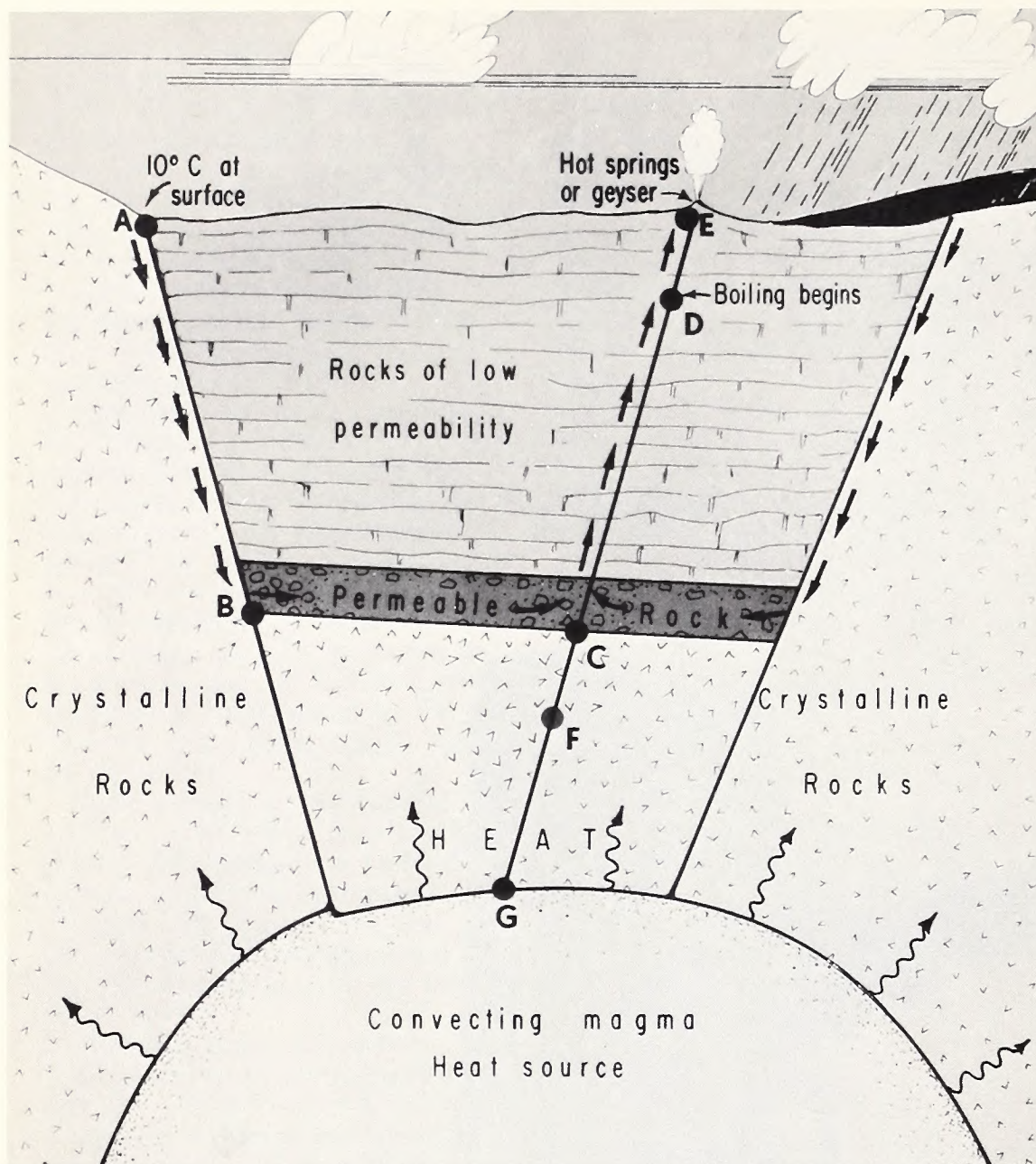
"We now hope to get non-competitive leases issued in about eight months from the date of



application, assuming no undue delays for environmental reasons. We feel this is reasonable considering the volume of applications to be processed and built-in delays due to questions about the status of specific land parcels, environmental assessment requirements, or the need for special stipulations."

Geothermal reservoirs generally are located in areas of geologically recent volcanic and earthquake activity in which molten material from deep within the earth has invaded the crust. This invasion





Schematic model of a geothermal steam system. In this system water is percolated through rock fractures represented by line AB into a layer of porous rock heated by the magma deep inside the earth. As the water is heated under great pressure, it rises through fracture CE. When it reaches point D a portion flashes into steam because of the reduced pressure and is released from point E.

heats up the rocks around it, creating steam fields or dry hot-rock deposits with temperatures in the 150- to 650-degree F. range.

The first geothermal field to be exploited commercially was one at Larderello, Italy, north of Florence, where a plant has been producing electricity continuously since 1904.

It is said that the Florentine poet Dante Alighieri based his vision of the "Inferno" not only upon the strictures of medieval

cosmology — the motionless earth of the Ptolemaic system, the Hemisphere of Water, the Spheres of Fire, and of the Moon — but upon memories of the Larderello field's awesome jets of steam as well.

Who can say whether memories of the Larderello steam field contributed to the poignant imagery of Dante's "Divine Comedy"? It is enough to quote briefly from "The Inferno":

*"True it is, I stood on the edge
of descent
Where the hollow of the gulf
out of despair
Amasses thunder of infinite lament*

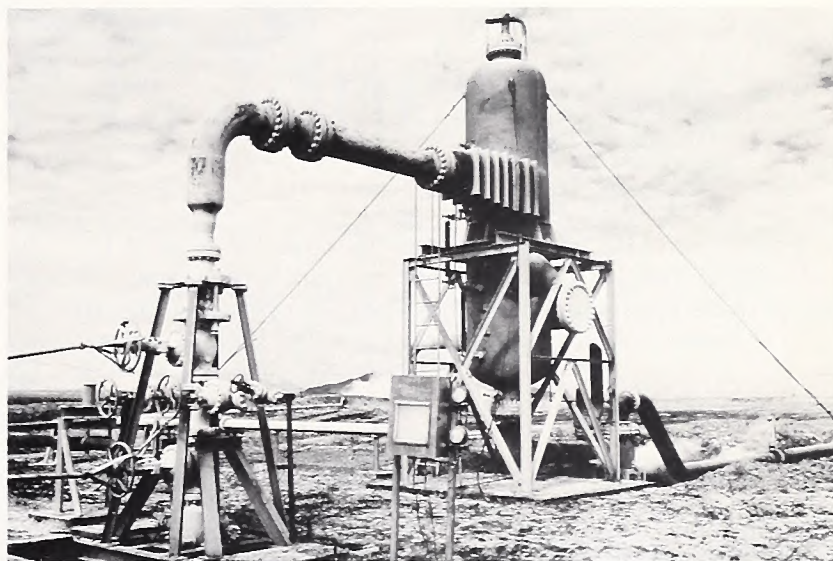
*Somber, profound and brim-
med with vaporous air
It was, so that I, seeking to
pierce through
To the very bottom, could see
nothing there."*

The Larderello plant today generates about 380 Megawatts of electricity, enough to supply the needs of a medium sized city.

The earliest geothermal fields developed — fields such as Larderello, the Geysers north of San Francisco, Calif., and those in



The Cerro Prieto Geothermal Steam Plant in Mexico taps energy from a well producing steam and hot water. The Mexicans are now ahead of the United States in developing this kind of well. Steam coming from the well is separated from the water by centrifugal force in the tank shown at the lower right. The steam is then used to turn turbines producing electricity. After water passes through cooling towers (lower left), it is used to cool the steam before it is discharged from the plant.



New Zealand — are known as “dry steam” reservoirs. Although such formations are favorable for power production, they are — unfortunately for a fuel-short world — rare phenomena. They occur where steam collects in near-surface cracked rock following boiling of deep, hot, underground water supplies.

Commercial development of the Geysers dates back to 1922, but extensive exploration and development did not start until the mid-1950s. Despite some setbacks (on one occasion, drillers failed to cap a well fast enough after reaching pressurized steam and the well blew out) commercial power was successfully generated.

Today, the Geysers, the only commercial field operating in the United States, produces 522 Megawatts of electricity for the Pacific Gas and Electric Co.

Another type of field is known as a “wet stream” reservoir because it spews forth steam mixed with hot water. Best known examples of this type of geothermal activity are the Yellowstone National Park geysers.

Promising research is being done on finding better ways to use geothermal hot water or brine such as that found in the Imperial Valley to produce electricity. Geothermal brines pose special problems for existing turbine systems because of their scaling and corrosive properties.

Recently, the San Diego Gas & Electric Co. announced it was starting construction on the first geothermal pilot plant in Southern California, a \$4 million test facility designed to draw enough energy from the floor of the Imperial Valley near the Salton Sea to drive a 10,000-Kilowatt generator.

The geothermal test facility will flash geothermal brine to steam after it leaves the well. A scrubbing system developed by Magma Power Co. of Los Angeles will

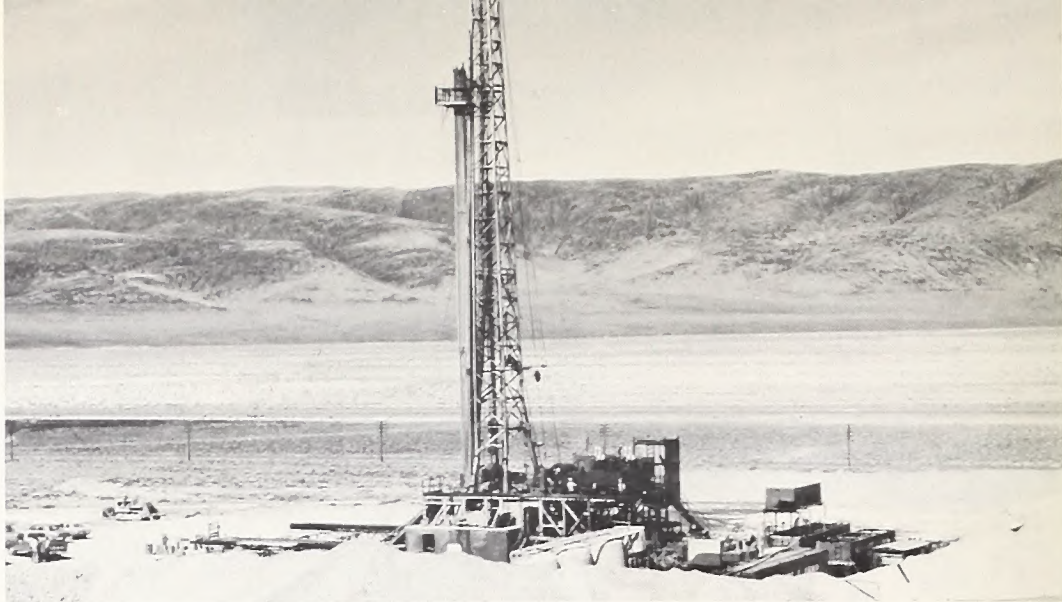
reduce salinity, stripping the steam of impurities before it reaches a heat exchanger which will transfer the heat to a closed cycle.

Interior's Geological Survey continues to conduct geothermal research on a number of fronts. And researchers from the Department's Bureau of Reclamation continue to conduct extensive investigations into the feasibility of using large quantities of desalted Imperial Valley geothermal brine to replenish the Colorado River's salty lower reaches.

The geothermal field, of course, has its own language. “Flashed steam.” “The binary vapor technique.” “A total flow system.” “Closed cycles.” “Low molecular weight gases,” etc.

The supply of untapped heat stored in mainly granitic hotrock formations is estimated to be sizeable. Researchers are now

An adapted oil drilling rig probes for deep-earth sources of heat at Brady Hot Springs in Nevada.



Other surface manifestations of Geothermal heat are seen in these photographs in California. Showing geothermal steam potential, such areas are classified as Known Geothermal Resources Areas.



working on a technique in which water is pumped into a hot dry-rock area to create steam.

Locating promising geothermal energy sources can be as difficult as developing them.

"Geothermal exploration techniques today are much like oil and gas exploration techniques were 50 years ago," said BLM's Pavlovich, "we have been looking in the obvious places where there are surface manifestations of geothermal activity.

"The oil and gas industry went through the same stage the geothermal industry is going

through now. Then oil exploration became more sophisticated and they began to make discoveries where there were no obvious surface manifestations.

"The same thing will happen in the geothermal field. It's really just in its infancy."

A young geologist's discovery of a geothermal super hot spot near Maryville, Montana, in 1969 was a case in point because surface evidence had shown no basis for such a find. A subsequent research project there was sponsored by a National Science Foundation grant.

What are geothermal resources? Is geothermal energy a mineral right or a surface right?

These and other difficult questions arose after a firm acquired private geothermal leases on 1800 acres of stockraising homestead lands in California and the Federal Government reserved the minerals. A Federal Court ruled that the mineral reservation under the Stockraising Homestead Act of 1916 did not include geothermal resources, and the Government appealed. The ultimate decision should help to define "geothermal resources."

The Immortalization of Henry E. Jones

They Restored a Trout Fishery and Bestowed
Immortality on a Forgotten Recluse.

Henry E. Jones was murdered. His body was discovered several weeks after the deed was done, and he was buried in a shallow grave beside Salmon Falls Creek in northeast Nevada. While Henry was alive, now more than 35 years ago, he lived off the land, feeding himself on rainbow trout, mule deer, and other things he could find along the stream.

Henry died before the suckers, chiselmouth, shiners, and other rough fish ruined the trout fishing along his stream. After Salmon Creek Reservoir was constructed to store irrigation water in 1910, there was a slow increase in non-game fish populations that gradually led to a take-over of trout waters above the reservoir. Maybe it was just as well that Henry didn't live to see his trout fishery ruined. He was the kind of

man who would have been sorely upset.

The local fishermen who came to fish in Henry's stream rarely noticed Henry's grave, but all were aware of the changes that were taking place in the fish populations in the stream. They were upset just as Henry would have been.

As a result of their complaint things began to happen. The Jackpot, Nevada Sportsman Club, Senator Allen Bible, the Nevada and Idaho Departments of Fish and Game, and the Bureau of Land Management initiated a cooperative project to improve the fisheries habitat in Salmon Falls Creek.

While the project was being planned, Henry's grave was discovered. To Rick Brigham, a BLM biologist working on the project, the grave became a puzzle from the past. He talked to old-timers in the area and searched through the files of local newspapers. His research brought an interesting story to light.

Henry E. Jones, also known as Salmon Falls Pete, was murdered along the stream where he had lived. Bill Cunningham, a BLM employee, reads the marker of Henry's Grave.

Henry E. Jones was never a gregarious man. During the decade of the thirties, he lived the life of a recluse along Salmon Falls Creek. On occasion he would hire out to a local rancher for a time, but because of a quiet, self-centered personality nobody ever got to know him well. He was best known for his home-made rubber-tired wheelbarrow, and he might be found anywhere along Salmon Falls Creek pushing all his

DONALD SEIBERT

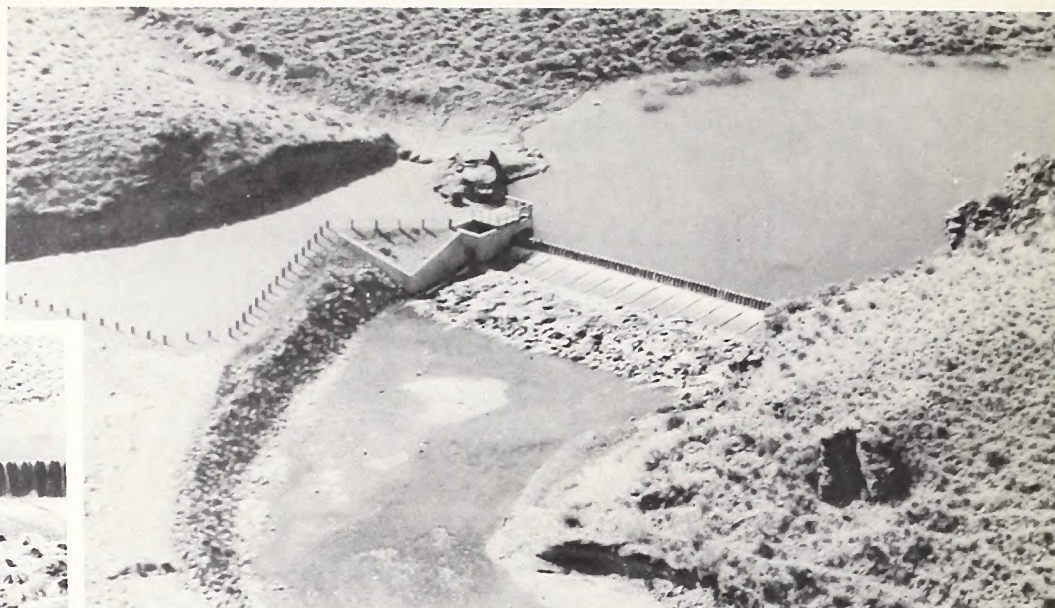
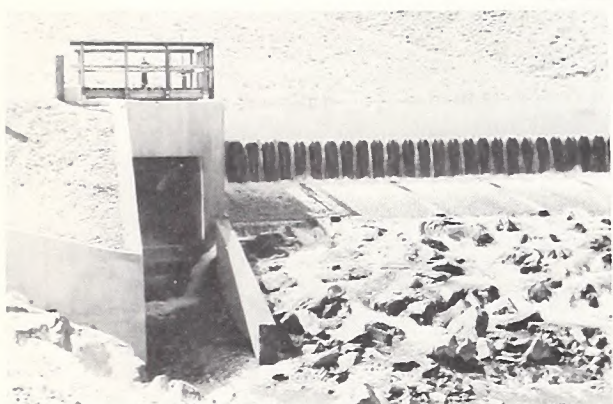
BLM Wildlife Biologist

&

PHYLLIS PAGE

Farmer's Home Administration
Elko, Nevada





This barrier on Salmon Falls Creek effectively prevents upstream migration of rough fish from the Salmon Falls Reservoir. After the barrier was erected, the upper portion of the stream was stocked with trout.

worldly possessions before him. Most of his time was spent camping, fishing, and living off the land. During this period he picked up the name "Salmon Falls Pete."

It's hard to say what riches of the spirit Henry possessed as he pursued his life of independence, or what knowledge he gained as he watched the seasons come and go, but his only known source of income was \$15 which his brother in Spokane, Washington, sent him each month. Apparently this and what he earned from his occasional odd jobs were enough for his needs, and he would periodically visit the Bugbee Service Station near Contact, Nevada, to buy a few supplies. His one extravagance was to buy candy for any kids who happened to be around the station during his visit.

As Henry grew older, he finally settled down in a small cabin on the bank of the creek where he could still hunt and fish and enjoy the solitude.

Of course there were many who felt that Henry was not right in the head, and because of his peculiar habits and hermit-like behavior, he was suspected when a child named Mattson was kidnapped and murdered in 1939.

The FBI arrested Henry and brought him into Elko for questioning. The idea that people would suspect him of such a

crime made Henry so darned mad that he was irrational during the questioning and for awhile the FBI agent was certain that Henry was his man. Eventually he was cleared, then released and sent back to his cabin with a new suit of clothes.

When Henry failed to show up at the service station at the usual time, the owner got worried and a local constable went into the hills to see what was wrong. He found Henry's charred remains among the ashes of his cabin, but a bullet in his brain told the true story.

There was popular rumor that Henry had money hidden away in his cabin. Presumably Henry had been murdered by somebody who believed that rumor and the cabin burned to cover the crime. His killer was never found.

After workers on the fish barrier found Henry's 30-year-old grave they erected a historical marker over the spot. It reads:

HERE LIES HENRY E. JONES
Better Known As
"Salmon Falls Pete"
Born Unknown
Died February 1940
A Gentle Recluse of a Man
Loved this Creek and this
Land
Peace he Found in the Sand
Delivered by a Murderer's
Hand

In the continuing efforts to restore the Salmon Falls fishery, the biologists were convinced that no remedy would be effective as long as rough fish were free to migrate upstream from the overcrowded reservoir. This could be prevented only by a physical barrier. A low dam, 8 feet high, 100 feet long, and 25 feet wide was built across the stream. This "Chinese Wall" was effective in stopping upstream migration, but there was still the problem of those non-game fish already established above the barrier.

Applications of Antimycin-A were next used to eliminate the rough fish from the waters above the barrier. Antimycin-A is a selective toxicant which only inhibits the respiratory system of a fish. The toxicant was neutralized with potassium permanganate at the barrier so as not to affect fish downstream from the barrier site.

With all the rough fish eliminated above the barrier, the biologists now stocked the treated portion with catchable and fingerling trout. Without the competition from the non-game fish, the trout were soon re-established above the barrier.

With the return of the trout, fishermen have come back to the stream, and they are catching limits of trout.

We cannot be sure — but we think Henry would be pleased.



When the State of Georgia ceded its western lands to the Federal government in 1802, the town of Natchez was already 86 years old. Located on the Mississippi River and on the western rim of the newly acquired public domain, the town had been ruled under 4 flags and had experienced turbulent years.

NATCHEZ

The Loyalist Colony

*Throughout the
American Revolution,
the Citizens of
Natchez Remained
Loyal to the
British Crown.*

It has been generally noted that the British restricted colonial settlement west of the Allegheny Mountains, but Natchez was an exception to this general rule. During the French and Indian War, England wrested control of the eastern bank of the Mississippi River from France. Certain colonial subjects who had rendered exceptional military service to the Crown, were awarded with grants of land around Natchez.

Those who received the grants were properly grateful, and Natchez was a hot bed of Tory sentiment throughout the American Revolution. It also became a place of refuge for some who were forced to flee the colonies because of their loyalty to the King.

The site of the city was first settled by the French at a time when they still dreamed of a New World empire. Jean Baptiste Le Moyne, Sieur de Bienville, built a stockade on a bluff overlooking the Mississippi River in 1716 and named it "Fort Rosalie." Fort Rosalie was then the outpost of the French Empire in the Mississippi River Valley and the beginning of the City of Natchez.

Before the French, the area was the home of the Natchez Indians. The Natchez were a people with a proud tradition and still practiced the sacred rituals of their ancestors who belonged to what archaeologists now call the Mississippian culture. They also retained at least the vestiges of the complex social organization peculiar to the Mississippian Culture. Their religious and cultural capital, called White Apple Village, was located near Natchez.

The Natchez was one of three tribes that lived along the east bank of the Mississippi River below the mouth of the Ohio. To the north of the Natchez were the Choctaws, and to the north of the Choctaws were the Chickasaws. When the French came to the area, the Natchez had allied themselves with the Chickasaws against the Choctaws, who soon allied themselves with the French.

As long as de Bienville was in control of the colony, the French and the Natchez managed to co-exist with a minimum of trouble, but de Bienville's position in the colony made him enemies and in 1724 he was recalled to France. The officials who came after him were less skillful in the management of a colony on the frontier. These new officials soon decided that they needed the land occupied by White Apple Village and ordered the Indians to evacuate the site. With credible guile, the Indians played for time while they laid their plans.

First they persuaded the French that their allies, the Choctaws, had turned against them and were planning a surprise attack. Next they convinced the French that they would help repel the treacherous Choctaws, if only, the

PAUL C. HERNDON

BLM Office of Public Affairs

French would give them arms to fight with. It was then time for the Natchez to celebrate their annual corn dance and they invited the French to join the festival. As incredible as it now seems, the French commander, who some say was even forewarned, did all the Indians asked. On the morning of November 29, 1729, the Indians fell on the unsuspecting French and slaughtered them with their own guns.

A few of the French survived to take the news to New Orleans. The authorities there reacted with horror and anger. They enlisted the aid of the Choctaws and the combined force fell on the Natchez and destroyed them as a tribe. All that were left were a few who managed to escape to the north and took refuge among their allies, the Chickasaws.

As difficulties mounted within the Colony, the French asked de Bienville to return and take command. He arrived in 1733. Perhaps the years in France and the persecution of his enemies had taken something out of him, perhaps he was only older, but it was now his turn to blunder. The Chickasaws were openly encouraging the English to trade in the Mississippi Valley. The French claimed a trading monopoly in the area and de Bienville decided to move against the Chickasaws.

He laid his plans carefully. One French force would move south from settlements in Illinois, while he and his Choctaw allies moved north. His intention was to crush the Chickasaws between the two forces and finally secure the east bank of the Mississippi for France and those tribes allied with her cause. It was a sound battle plan, but de Bienville moved too slow and the two forces did not meet up.

On March 24, 1736, the Chickasaws found the Illinois force near today's site of Tupelo, Mississippi and destroyed it. Two months later de Bienville arrived and was defeated in the Battle of Ackia.

The Battle of Ackia was decisive in that it kept the French from gaining a firm foothold on those lands between the Tennessee and Cumberland Rivers and left the

way open for English traders and later English settlers in the area.

In 1763 the Treaty of Paris ended the French and Indian War and Great Britain took possession of most French holdings in North America — including Natchez. In 1767 the French ceded Louisiana to Spain. The Spanish took control of New Orleans, and all the east bank of the Mississippi, as far north as Baton Rouge. All the west bank of the River was then recognized as Spanish Territory. For a time Natchez was abandoned, and the land quickly reverted to wilderness.

However, George III felt generous toward those colonists who had helped win the war. While he closed the west to most would-be colonial settlers, he made large grants of land to crown favorites in the Natchez area. Natchez was reborn and the countryside around it started to take on the trappings of southern plantation life.

The high ground was cleared of its trees — magnolia, pecan and oak — and the cane was cleared from the brakes. Clearing land was backbreaking business and the owners brought in slaves to help with the work. In the beginning a new owner would buy two or three slaves and work in the fields beside them. But once the land was cleared it was unbelievably fertile, and as the owner prospered he devoted more of his time to leisure and left the field work to his slaves.

Soon they were building great houses with wide verandas and white columns and giving impressive names to their estates. They raised blooded horses and laid out courses for racing. In those days cotton was not yet king; the cash crop was indigo.

The Spanish controlled the mouth of the Mississippi and might conceivably prevent them from sending their crops to market. Beyond this they had few

concerns. The quarrel between the colonists to the east and their king was only a small cloud on their horizon. Boston was far away — so far in fact, that when a gentleman from that city died in Natchez, it took a year for the news to reach his kin.

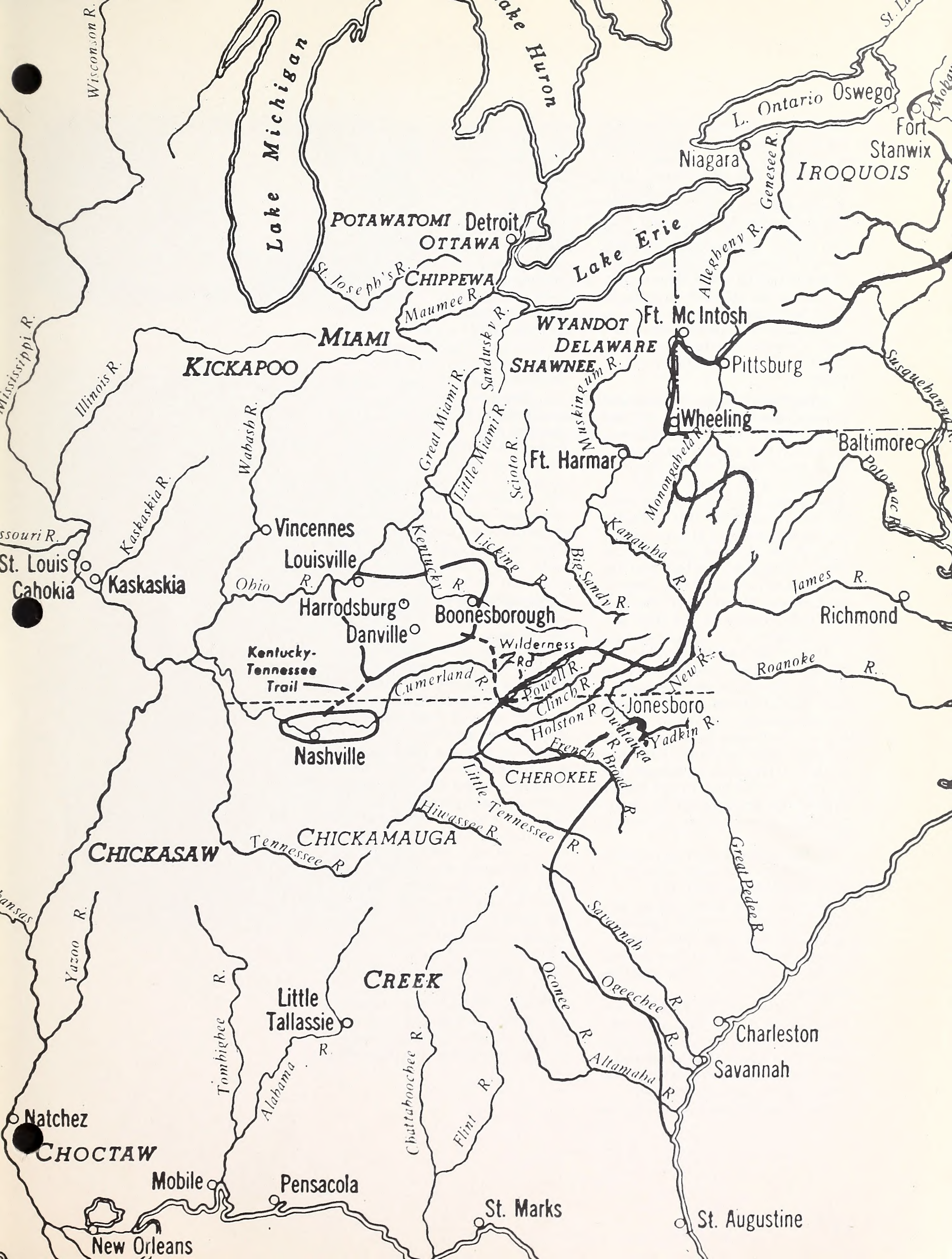
The residents of Natchez should have paid more attention to that quarrel, for not all who settled in the city were loyal to the King. Stretching north by east from the city was a pathway through the forest. It was then known as the Choctaw Path — but would later become famous as the Natchez Trace. The Trace linked the city with illegal colonial settlements on the Ohio and Cumberland Rivers. Also the Mississippi River system led to colonial settlements in western Pennsylvania. Along these routes came some who felt that the cause of justice lay with the Colonies rather than with the King.

Among the newer merchants of Natchez was one Robert Willing. Historians disagree over Willing's motive — whether super patriot or rank opportunist is still debatable — but there is no disagreement over what he did.

After a less than a spectacular career as a merchant in Natchez, he arrived in Philadelphia in 1777 and was commissioned as a captain in the American Navy. Thereafter, he took command of an armed boat, "The Rattletrap," and a crew of 30 men. After a trip down the Ohio and Mississippi Rivers, he arrived in Natchez with a commission to seize British property along the river. He took a few prisoners, burned a few houses, and confiscated a lot of valuables, and then passed down river, through New Orleans and returned by sea to Philadelphia.

Like a gnat, Willing had irritated and annoyed the Loyalists at Natchez without doing any real harm. The greatest insult was having the blow come from one of the city's own — a neighbor of

-
- Approximate limit of settlement
 — · — · — Southeast and west boundary Pennsylvania
 - - - - - Westward extension Virginia-North Carolina Boundary



those taken prisoner and a visitor in the homes he had destroyed. In high dudgeon, the Loyalists regrouped, and with Willing safely down the river, they reasserted the British presence and once more hoisted the British flag over the town's fortifications. When a second force of Americans approached, they were driven off.

Then came disaster. In June of 1779 Spain declared war on England, and Spanish forces from New Orleans marched on Natchez. Their city fell on October 5.

It had been an easy victory, and the Spanish Commander was in a good mood; he proposed easy terms for the English residents. They could keep their religion and their lands. Spain would buy their crops, and if any felt inclined to leave, they were free to return to English territory at any time they chose. A small garrison was left in charge of the fort, and the flag of Spain replaced the Cross of St. George. Beyond that, there was little change in the lives of the residents.

At first the residents were inclined to accept the Spanish conditions, but when they learned that Spanish forces were attacking British positions in Mobile and Pensacola, loyalty became stronger than discretion. After the British commander sent word that a revolt in Natchez would help relieve the pressure on his own position, the Loyalists started to plot.

In this matter blood was thicker than politics and even residents who sympathized with the American cause were willing to take a hand in a revolt against Spain. On April 29, 1781, the citizens took the fort by ruse and made prisoners of the Spanish garrison.

The elation of the Loyalists was short lived. A few days after taking the town, they received news that Pensacola had surrendered and that the Spanish were sending their entire force to Natchez.

The Loyalists were stunned. No

one was naive enough to believe that the Spanish would be lenient a second time. A large number of residents — Loyalists and American sympathizers alike — fled north along the Natchez Trace. The flight that started as a ludicrous rout gained dignity as it soon became a saga of human endurance, fortitude and courage. Men, women and children endured hunger, fatigue and disease in their flight to safety.

Somewhere up the trace the group split into two parties — probably along the lines of British and American sympathies. The Loyalists headed east and, after crossing most of what is now Mississippi, Alabama and Georgia reached British forces then in control of Savannah, Georgia. The rest continued north along the Trace and were eventually given shelter by the Chickasaw's Scottish Chief James Logan Colbert. Eventually they reached shelter in the American settlements along the Cumberland River that would become today's city of Nashville, Tennessee.

The anger of the Spanish commander was short lived and eventually most of the English settlers returned to Natchez, where the Spanish allowed them to take up their former estates.

By this time the American Revolution was over, and the territory around Natchez eventually became part of the new republic. Many of the old Loyalist settlers lived to see that day and like it not one whit better than they did when the British flag gave way to the Flag of Spain. After the territory was acquired by the United States the State of Georgia reasserted its colonial claims to most of the land and the claim was recognized until it was ceded to the public domain in 1802. Out of this cession came the new states of Alabama and Mississippi. As for Natchez, already old, its history was just beginning.



This is a compilation of the most up-to-date information possible on up-coming sales of public lands by State Offices of the Bureau of Land Management. For details of land descriptions, prices, and other information pertinent to sales, you must write the individual State Office concerned. In most cases, there are adjoining land-owners who have statutory preference rights and may wish to exercise them to buy the land. Sales notices will point out, insofar as possible, problems relating to (1) access, (2) adjoining owner preference rights, (3) small-tract sales limitation of one per customer, and other pertinent information. When possible, all sales are scheduled far enough in advance so ample notice can be given in Our Public Lands. Sales listed can be canceled on short notice for administrative and technical reasons. A listing of BLM State Offices with addresses is found on the opposite page.

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99501

District Manager

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Fairbanks, Alaska
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ARIZONA:

Federal Bldg.,
Room 3022
Phoenix, Ariz. 85025

CALIFORNIA:

2800 Cottage Way,
Room E-2841
Sacramento, Calif.
95825

COLORADO:

1600 Broadway
Room 700
Denver, Colo. 80202

IDAHO:

Federal Bldg.,
Room 334
550 W. Fort St.
Boise, Idaho 83702

MONTANA (N. Dak., S. Dak.):

Federal Bldg.
316 North 26th St.
Billings, Mont. 59101

NEVADA:

Federal Bldg.,
300 Booth St.
Reno, Nev. 89502

NEW MEXICO (Okla.):

Federal Bldg.
P.O. Box 1449
Sante Fe, N. Mex.
87501

OREGON (Washington):

729 Northeast
Oregon St.
P.O. Box 2965
Portland, Oreg. 97208

UTAH:

Federal Bldg.
125 South State St.
P.O. Box 11505
Salt Lake City, Utah
84111

WYOMING (Nebr., Kans.):

2120 Capitol Ave.
P.O. Box 1828
Cheyenne, Wyo.
82001

ALL OTHER STATES:

Robin Bldg.
7981 Eastern Ave.
Silver Spring, Md.
20910

Adjoining landowners have first rights in purchasing public land advertised for sale, and in many cases will prefer to exercise this right.

CALIFORNIA

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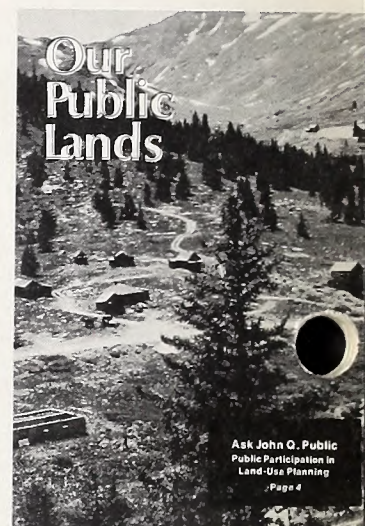
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